



## **NASA Soil Moisture Active Passive (SMAP) Applications**

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The launch of the NASA Soil Moisture Active Passive (SMAP) mission in 2014 will provide global soil moisture and freeze-thaw measurements at moderate resolution (9 km) with latency as short as 24 hours. The resolution, latency and global coverage of SMAP products will enable new applications in the fields of weather, climate, drought, flood, agricultural production, human health and national security. To prepare for launch, the SMAP mission has engaged more than 25 Early Adopters. Early Adopters are users who have a need for SMAP-like soil moisture or freeze-thaw data, and who agreed to apply their own resources to demonstrate the utility of SMAP data for their particular system or model. In turn, the SMAP mission agreed to provide Early Adopters with simulated SMAP data products and pre-launch calibration and validation data from SMAP field campaigns, modeling, and synergistic studies. The applied research underway by Early Adopters has provided fundamental knowledge of how SMAP data products can be scaled and integrated into users' policy, business and management activities to improve decision-making efforts. This presentation will cover SMAP applications including weather and climate forecasting, vehicle mobility estimation, quantification of greenhouse gas emissions, management of urban potable water supply, and prediction of crop yield. The presentation will end with a discussion of potential international applications with focus on the ESA/CEOS TIGER Initiative entitled "looking for water in Africa", the United Nations (UN) Convention to Combat Desertification (UNCCD) which carries a specific mandate focused on Africa, the UN Framework Convention on Climate Change (UNFCCC) which lists soil moisture as an Essential Climate Variable (ECV), and the UN Food and Agriculture Organization (FAO) which reported a food and nutrition crisis in the Sahel.